

What is claimed is:

1. A method of fabricating a multi-fiber polarization-maintaining fiber assembly comprising:

(1) a cover removal step for removing covers a few centimeters at one end from a plurality of polarization-maintaining fiber cables with difference of a few millimeters;

(2) an assembly step for inserting the polarization-maintaining fiber cables into an insertion hole of a holder tube, holding them integrally with their exposed fiber portions arranged abreast at proximal end, and sealing the leading end of the insertion holes of the holder tube with a thermoset resin which is relatively high in the viscosity;

(3) an adhesive filling step for filling the inner space of a multi-fiber ferrule with a thermoset resin which is relative low in the viscosity;

(4) an fiber cable insertion step for inserting the polarization-maintaining fiber cables assembled integral with the holder tube into the inner space of the multi-fiber ferrule, and inserting thier exposed fiber portions into corresponding fiber holes of the multi-fiber ferrule;

(5) an orientation adjustment step for, while clamping the multi-fiber ferrule with a clamping jig not to be turned, rotating each of the polarization-maintaining fiber cables to determine its orientation; and

(6) an adhesive curing step for heating up the multi-fiber ferrule remaining clamped by the clamping jig to cure the thermoset resins.

2. An apparatus for fabricating a multi-fiber polarization-maintaining fiber assembly comprising:

a clamping jig and an orientation adjusting unit, the claiming jig including a ferrule clamping means for clamping a multi-fiber ferrule so as not to be rotated and an fiber cable clamping means for clamping polarization-maintaining fiber cables so as to be rotated, the orientation adjusting unit including an imaging means for imaging a leading end of the polarization-maintaining fiber cables held in the multi-fiber ferrule clamped by the clamping jig, an image processing means for identifying the orientation of each of the polarization-maintaining fiber cables based on each image of the leading end of the polarization-maintaining fiber cables, and an orientation adjustment controlling means for controllably driving the fiber cable clamping means to axially rotate each of the polarization-maintaining fiber cables for automatically adjusting the orientation of each of the polarization-maintaining fiber cables.

3. An apparatus for fabricating a multi-fiber polarization-maintaining fiber assembly according to claim 2, wherein the orientation adjustment controlling means is arranged to axially rotate the polarization-maintaining fiber cables and when a stabilization time has been passed,

check the orientation.

4. An apparatus for fabricating a multi-fiber polarization-maintaining fiber assembly according to claim 2 or 3, wherein the clamping jig includes a heating means for heating up the multi-fiber ferrule clamped by the ferrule clamping means, and the orientation adjusting unit includes a heatup controlling means for controllably driving the heating, after the orientation adjustment, to heat and cure the thermoset resins.

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